

What is claimed is:

1. An optical deflection device for diverting the direction of light rays comprising:
a plurality of deflecting elements comprising a first pair of deflecting elements and a second pair of deflecting elements, where each deflecting element comprises an electro-optical material and is defined by two electrodes of similar shape on opposite sides of said electro-optical material, such that the index of refraction of said electro-optical material is controllably adjustable by applying a voltage difference to said electrodes,
where said first pair of deflecting elements and said second pair of deflecting elements are in a tilted relationship.
2. The optical deflection device of claim 1, wherein adjacent surfaces of said first pair of deflecting elements are planar and parallel, and wherein adjacent surfaces of said second pair of deflecting elements are planar surfaces and parallel.
3. The optical deflection device of claim 2, wherein adjacent surfaces between said first pair of deflecting elements and said second pair of deflecting elements are planar and parallel.
4. The optical deflection device of claim 1, wherein said electrodes are triangular.
5. The optical deflection device of claim 1, wherein the edges of each electrode are straight.
6. The optical deflection device of claim 1, wherein at least one edge of at least one electrode is curved.
7. The optical deflection device of claim 1, wherein said electro-optical material is PZT, PLZT, or LN.
8. The optical deflection device of claim 1, wherein said first pair of deflecting elements and said second pair of deflecting elements have the same shape.
9. The optical deflection device of claim 2, wherein adjacent surfaces between said first pair of deflecting elements and said second pair of deflecting elements are planar and parallel, and wherein said first pair of deflecting elements and said second pair of deflecting elements have the same shape.
10. An optical switching module comprising:
an input side having one or more input channels each adapted to accept an optical input;
an output side having a plurality of output channels each adapted to deliver an optical output; and
a common waveguide disposed between said input side and said output side,

where at least one input channel comprises a plurality of deflecting elements comprising a first pair of deflecting elements and a second pair of deflecting elements in a tilted relationship.

11. The optical switching module of claim 10, wherein each deflecting element comprises an electro-optical material and is defined by two electrodes of similar shape on opposite sides of said electro-optical material, such that the index of refraction of said electro-optical material is controllably adjustable by applying a voltage difference to said electrodes.

12. The optical switching module of claim 10, wherein adjacent surfaces of said first pair of deflecting elements are planar and parallel, and wherein adjacent surfaces of said second pair of deflecting elements are planar surfaces and parallel.

13. The optical switching module of claim 12, wherein adjacent surfaces between said first pair of deflecting elements and said second pair of deflecting elements are planar and parallel.

14. The optical switching module of claim 11, wherein said electrodes are triangular.

15. The optical switching module of claim 11, wherein the edges of each electrode are straight.

16. The optical switching module of claim 11, wherein at least one edge of at least one electrode is curved.

17. The optical switching module of claim 10, wherein said electro-optical material is PZT, PLZT, or LN.

18. The optical switching module of claim 10, wherein said first pair of deflecting elements and said second pair of deflecting elements have the same shape.

19. The optical switching module of claim 12, wherein adjacent surfaces between said first pair of deflecting elements and said second pair of deflecting elements are planar and parallel, and wherein said first pair of deflecting elements and said second pair of deflecting elements have the same shape.

20. The optical switching module of claim 10, wherein the refractive index of said common waveguide is less than the refractive index of said input side and the refractive index of said output side.

21. A method for deflecting light beams in an optical switching module having an input side with one or more input channels each adapted to accept an optical input, an output side with a plurality of output channels each adapted to deliver an optical output, and a common waveguide disposed between said input side and said output side, where at least one input channel comprises

a plurality of deflecting elements comprising a first pair of deflecting elements and a second pair of deflecting elements in a tilted relationship, said method comprising:

controlling the deflection of a light beam at said input side from a selected input channel to a selected output channel by applying different voltages to said first pair of deflecting elements and said second pair of deflecting elements.

22. The method of claim 21, wherein said controlling further includes applying a voltage to said first pair of deflecting elements to deflect a selected input to one of approximately two thirds of said plurality of optical channels

23. The method of claim 22, wherein said controlling further includes applying a voltage to said first pair of deflecting elements and to said second pair of deflecting elements to deflect a selected input to one of approximately one third of said plurality of optical channels.

24. The method of claim 21, wherein at least one output channel comprises a plurality of deflecting elements comprising a third pair of deflecting elements and a fourth pair of deflecting elements in a tilted relationship, said method further comprising:

controlling the deflection of a light beam at said output side from a selected input channel to a selected output channel by applying different voltages to said third pair of deflecting elements and said fourth pair of deflecting elements.

25. The method of claim 24, wherein said controlling the deflection at said output side further includes applying a voltage to said third pair of deflecting elements to deflect a selected input to one of approximately two thirds of said plurality of optical channels

26. The method of claim 25, wherein said controlling the deflection at said output side further includes applying a voltage to said third pair of deflecting elements and to said fourth pair of deflecting elements to deflect a selected input to one of approximately one third of said plurality of optical channels.